is supported by the specification, for example, at page 5, 3rd paragraph to page 6, 1st full paragraph. New claim 26 is supported by the specification, for example, at page 5, 3rd paragraph to page 6, 1st full paragraph and page 24, 1st and 2nd paragraphs. No new matter is added by the amendments or the new claims.

Furthermore, a proposed drawing correction is enclosed. This correction replaced reference number 8 with reference number 9 in Figs. 3 and 4 such that the figures are consistent with the discussion on pages 21-23.

Claims 1-12 and 14-23 stand rejected and claim 13 was objected to under 37 C.F.R. 1.75(c). Applicants respectfully request reconsideration of the rejections and objection based on the following comments.

Claim Objections

Claim 13 was objected to under 37 C.F.R. 1.75(c) as being improper form. Claim 13 has been amended and is now in a condition for allowance.

Claim Rejections Under 35 USC § 102

The Examiner rejected claims 1-6, 11, and 22 as anticipated by Knox (U.S. Patent No. 5,627,854) under 35 U.S.C. § 102(b). To advance prosecution of the application, Applicants have amended claim 1 to more particularly point out Applicants' invention. Applicants respectfully request reconsideration of the rejection in view of the following comments.

Knox does not disclose a layer sequence that contains a quantum well, a cap layer, an optional intermediate layer, and an optional anti-reflective layer with a thickness of $\lambda/2$. To advance prosecution of the case, Applicants have amended claim 1 to specify a layer sequence with a thickness of $\lambda/2$.

Therefore, since Knox does not disclose all of the elements of Applicants' claimed invention, Knox does not anticipate Applicants' claimed invention. With respect to the features of the dependent claims noted by the Examiner, Applicants do not comment on these although they do not acquiesce in the Examiner's assertions. The features of the dependent claims are presently moot in view of the patentability of claim 1. Applicants respectfully request withdrawal

of the rejection of claims 1-6, 11, and 22 as anticipated by Knox (U.S. Patent No. 5,627,854) under 35 U.S.C. § 102(b).

Rejection Of Claims 7 And 8 Under 35 USC § 103

The Examiner rejected claims 7 and 8 as being unpatentable over Knox (U.S. Patent No. 5,627,854) in view of Cunningham et al. (U.S. Patent No. 5,701,327) under 35 U.S.C. § 103(a). To advance prosecution of the application, Applicants have amended claim 1 to more particularly point our the claimed invention. Applicants respectfully request reconsideration of the rejections based on the following comments.

With respect to claim 1 and claims depending from claim 1, the deficiencies of the Knox patent are discussed above. Specifically, the Knox patent does not disclose a specific layer sequence including the quantum well with a thickness of $\lambda/2$. Similarly, Cunningham does not disclose a layer sequence that contains a quantum well, a cap layer, an optional intermediate layer, and an optional anti-reflective layer with a thickness of $\lambda/2$. Since neither of the cited references disclose a layer sequence that contains a quantum well, a cap layer, an optional intermediate layer, and an optional anti-reflective layer with a thickness of $\lambda/2$, the combined disclosures of the cited references do not teach or suggest a layer sequence of Applicants' claim 1 with a thickness of $\lambda/2$. With respect to the other features discussed by the Examiner, these issues are presently moot, although Applicants' do not acquiesce in the assertions in the Office Action.

Since the combined disclosures of Knox and Cunningham do not teach or suggest all of the elements of Applicants' claimed invention, the combined disclosures of the cited references do not render claim 1 or any claims depending from claim 1 obvious. Since claims 7 and 8 depend from claim 1, Applicants respectfully request withdrawal of the rejection of claims 7 and 8 as being unpatentable over Knox (U.S. Patent No. 5,627,854) in view of Cunningham et al. (U.S. Patent No. 5,701,327) under 35 U.S.C. § 103(a).

Rejection Of Claims 9 And 12 Under 35 USC § 103

The Examiner rejected claims 9 and 12 as being unpatentable over Knox (U.S. Patent No. 5,627,854) under 35 U.S.C. § 103(a). Claims 9 and 12 directly or indirectly from claim 1. The

deficiencies of Knox with respect to claim 1 have been described above. Specifically, Knox does not teach or suggest a quantum well, a cap layer, an optional intermediate layer, and an optional anti-reflective layer with a thickness of $\lambda/2$. Since claims 9 and 12 depend from claim 1, Knox does not render claims 9 and 12 obvious. While Applicants do not acquiesce in the Examiner's position with respect to the specific elements of claims 9 and 12, these issues are presently moot, and Applicants do not comment on these issues further here. Since Knox does not render claims 9 and 12 prima facie obvious, Applicants respectfully request withdrawal of the rejection of claims 9 and 12 as being unpatentable over Knox (U.S. Patent No. 5,627,854) under 35 U.S.C. § 103(a).

Rejection Of Claims 10, 14-21 And 23 Under 35 USC § 103

The Examiner rejected claims 10, 14-21 and 23 as being unpatentable over Knox (U.S. Patent No. 5,627,854) in view of Alcock et al. (US 5,901,162) under 35 U.S.C. § 103(a). Claims 10 and 23 depend directly or indirectly from claim 1. To advance prosecution of the case, Applicants have amended claim 1 to more particularly point out their claimed invention. With respect to claim 14 and claims depending therefrom, Applicants believe that their has been a misunderstanding with respect to the references. Applicants respectfully request reconsideration of the rejection based on the following comments.

With respect to claim 1 and claims depending from claim 1, the deficiencies of the Knox patent are discussed above. Specifically, the Knox patent does not disclose a specific layer sequence including the quantum well with a thickness of $\lambda/2$. Similarly, Alcock does not disclose a layer sequence that contains a quantum well, a cap layer, an optional intermediate layer, and an optional anti-reflective layer with a thickness of $\lambda/2$. Thus, the combined disclosures of the cited references do not teach or suggest a layer sequence that contains a quantum well, a cap layer, an optional intermediate layer, and an optional anti-reflective layer with a thickness of $\lambda/2$. Since the combined disclosures of Knox and Alcock do not teach or suggest all of the elements of Applicants' claimed invention, the combined disclosures of the cited references do not render claim 1 or any claims depending from claim 1 obvious.

With respect to claim 14 and claims depending from claim 14, Applicants believe that there has been a misunderstanding with respect to the cited references. The Examiner cited the

Alcock reference for disclosing a transparent substrate. However, there is no motivation to combine the teachings of the references as suggested by the Examiner since the structures in Knox and Alcock are fundamentally different. In particular, there is no teaching in the references regarding the placement of the quantum well within a structure based on the combined teachings of the references. The structure in Alcock with a transparent substrate has a different motivation for the placement of the layers than in the structure of Knox with a non-transparent substrate. The Examiner's suggestion that a motivation for combining the teachings is the ability to grow layers non-epitxially does not seem well founded. Because the references do not teach how to position layers within a combined structure, the combined disclosures of Knox and Alcock do not lead to Applicants' claimed invention. Since there is no motivation to combine the references and the combined disclosures do not lead to Applicants' claimed invention, the combined disclosures of Knox and Alcock do not render claim 14 and claims depending from 14 *prima facie* obvious.

Since the combined disclosures of Knox and Alcock do not render Applicants' claimed invention *prima facie* obvious, Applicants respectfully request withdrawal of the rejection of claims 10, 14-21 and 23 as being unpatentable over Knox (U.S. Patent No. 5,627,854) in view of Alcock et al. (US 5,901,162) under 35 U.S.C. § 103(a).

Conclusions

Applicants believe that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,

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Application No. 9/877,923

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April 18, 2003
Date

Shari R. Thorndike

Application No. 9/877,923

ATTACHMENT
REDLINED AMENDMENT

IN THE CLAIMS

Claim 6 has been canceled.

Claims 1, 13 and 14 have been amended as follows:

1. (Twice Amended) A saturable reflector for a laser wavelength λ_L wherein [with which] a reflector (2) comprising a first reflector material (4) and a second reflector material (5) is applied onto a surface of a substrate (1), and a layer sequence (3) with a saturable absorbing effect is applied onto the reflector, characterized in that the layer sequence (3) contains a strained-layer single quantum well (6), [adjacent to] a cap layer (7) [of uniform composition], an optional intermediate layer (9), and an optional anti-reflective layer (8), whereby the thickness of the layer sequence (3) is a whole number multiple of $\lambda_L/2$, whereby the material composition of the cap layer (7) and the material composition of the intermediate layer (9) independently comprise the first reflector material (4) or the second reflector material (5), and whereby the material composition of the single quantum well (6), its layer thickness and its strain in the layer structure within a wavelength range all serve to define an absorbing effect, this wavelength range includes the laser wavelength λ_L, and moreover, the degree of the saturable effect is defined by the selection of the distance between the strained single quantum well (6) and the boundary surface of the cap layer adjacent to a surrounding gaseous medium ([8,]10).

13. (Twice Amended) The saturable reflector according to any [one or more] of Claims 1 through 5 or 22, characterized in that the saturable absorbing effect is adjustable through the selection of the position of the strained-layer single quantum well (6) within the structure of the adjacent layers, whereby these layers each have a greater layer thickness than the single quantum well.

14. (Twice Amended) A saturable absorber for a laser wavelength λ_L, comprising [that consists of] a layer sequence (3) of several semiconductor layers with a saturable absorbing

effect on a substrate (1) that is transparent for the laser wavelength, characterized in that the layer sequence (3) [contains] comprises a strained-layer single quantum well (6) and [adjacent to] a cap layer (7), whereby the material composition of the single quantum well (6), its layer thickness and its strain in the layer structure all serve to define an absorbing effect within a wavelength range, moreover, a saturable effect is defined by the selection of the position within the standing wave of a laser resonant cavity.

New claims 24-26 have been added as follows:

24. (New) The saturatable reflector of any one of claims 1 through 5, 7-13 and 22 wherein the material composition of cap layer (7) and the material composition of intermediate layer (9) comprise the material of last layer (4') of reflector(2).

25. (New) A saturable reflector for a laser wavelength λ_L wherein a reflector (2) is applied onto a surface of a substrate (1), and a layer sequence (3) with a saturable absorbing effect is applied onto the reflector, characterized in that the layer sequence (3) comprises a strained-layer single quantum well (6) and a cap layer (7), whereby the material composition of the single quantum well (6), its layer thickness and its strain in the layer structure within a wavelength range all serve to define an absorbing effect, this wavelength range includes the laser wavelength λ_L, and moreover, the degree of the saturable effect is defined by the selection of the distance between the strained single quantum well (6) and the boundary surface of the cap layer adjacent to a surrounding gaseous medium (10), wherein an absorption maximum for the laser wavelength λ_L is achieved by setting the lattice strain of the single quantum well and wherein said lattice strain lies in a range that is defined by the lattice mismatch between said single quantum well and the surrounding material of between 0.005 and 0.02 nm.

26. (New) A saturable absorber for a laser wavelength λ_L, comprising a layer sequence (3) of several semiconductor layers with a saturable absorbing effect on a substrate (1) that is transparent for the laser wavelength, characterized in that the layer sequence (3) comprises a strained-layer single quantum well (6) and a cap layer (7), whereby the material composition of

the single quantum well (6), its layer thickness and its strain in the layer structure all serve to define an absorbing effect within a wavelength range, moreover, a saturable effect is defined by the selection of the position within the standing wave of a laser resonant cavity, wherein an absorption maximum for the laser wavelength λ_L is achieved by setting the lattice strain of the single quantum well and wherein said lattice strain lies in a range that is defined by the lattice mismatch between said single quantum well and the surrounding material of between 0.005 and 0.02 nm.